

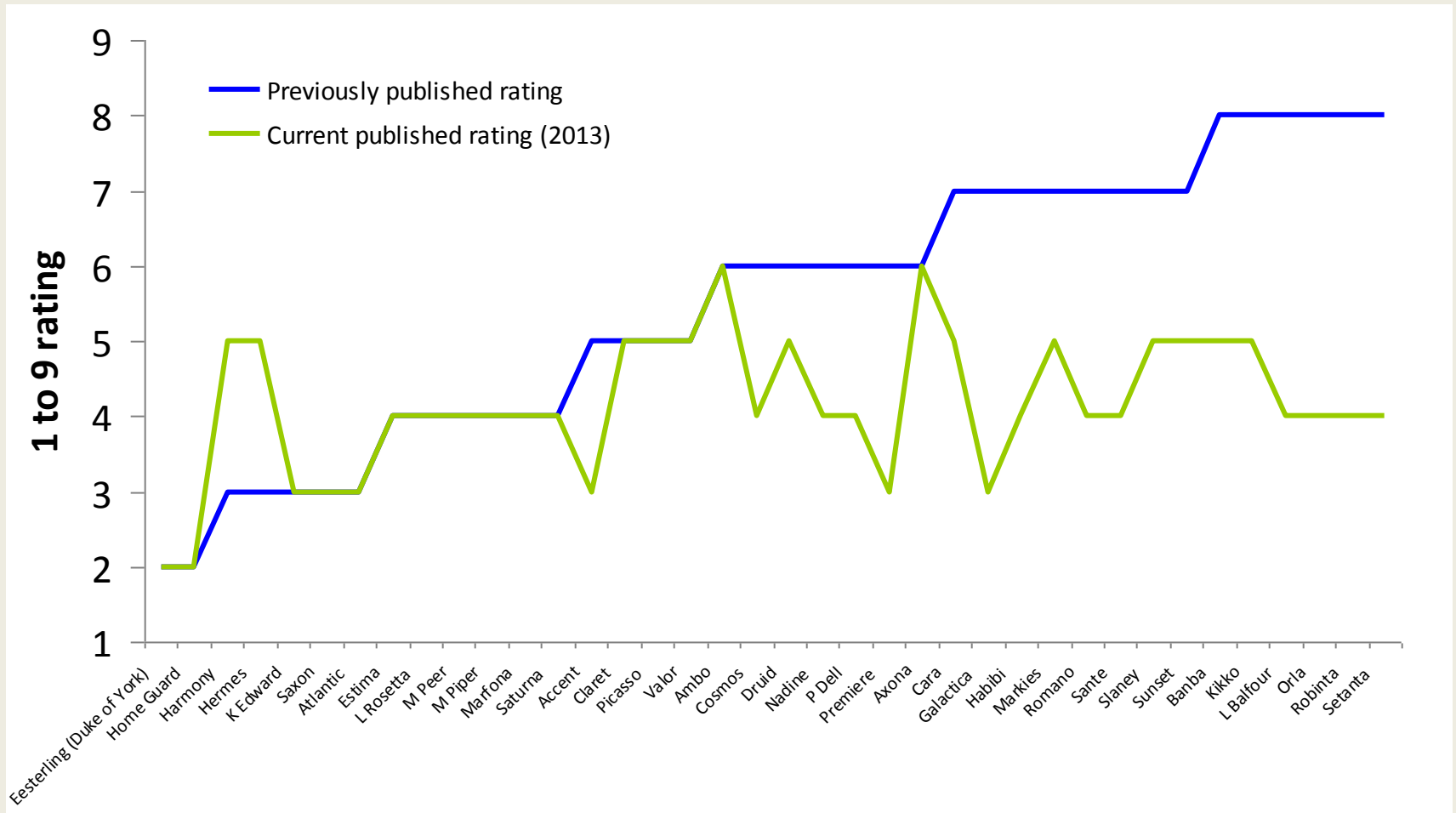
# Impact of fungicide input on leaf blight (*P. infestans*) development on different potato cultivars

SRUC: Ruairidh Bain

ADAS: Faye Ritchie, Chris Dyer

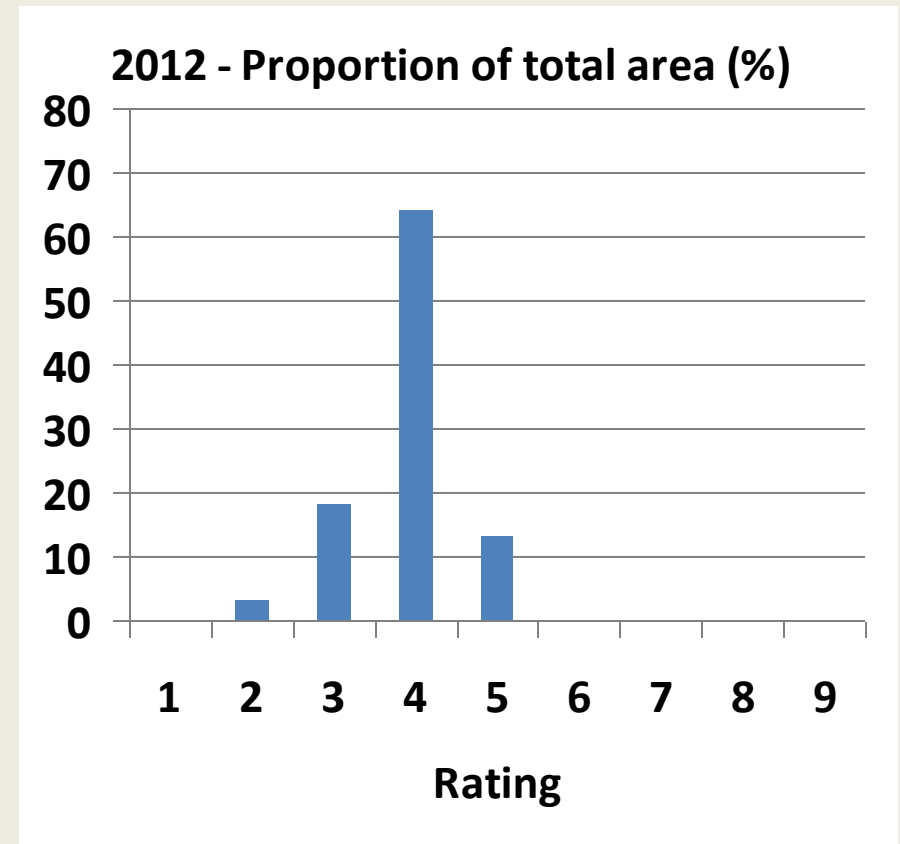
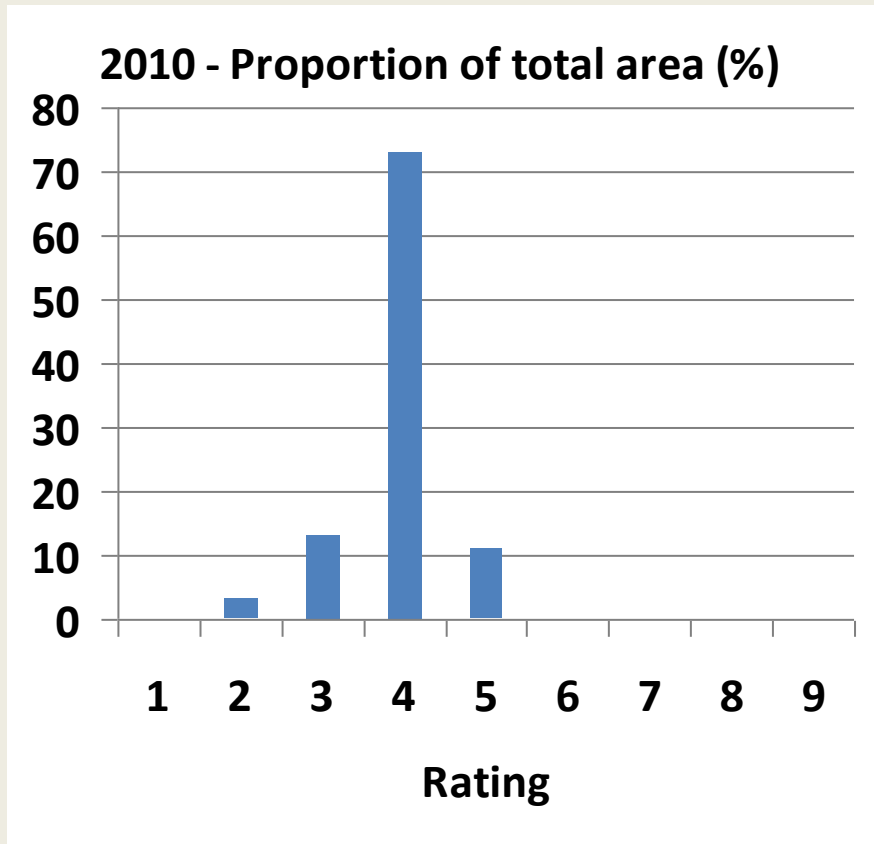
JHI: Alison Lees

# Change in published varietal resistance ratings with 13\_A2



Data from AHDB – Potato Council

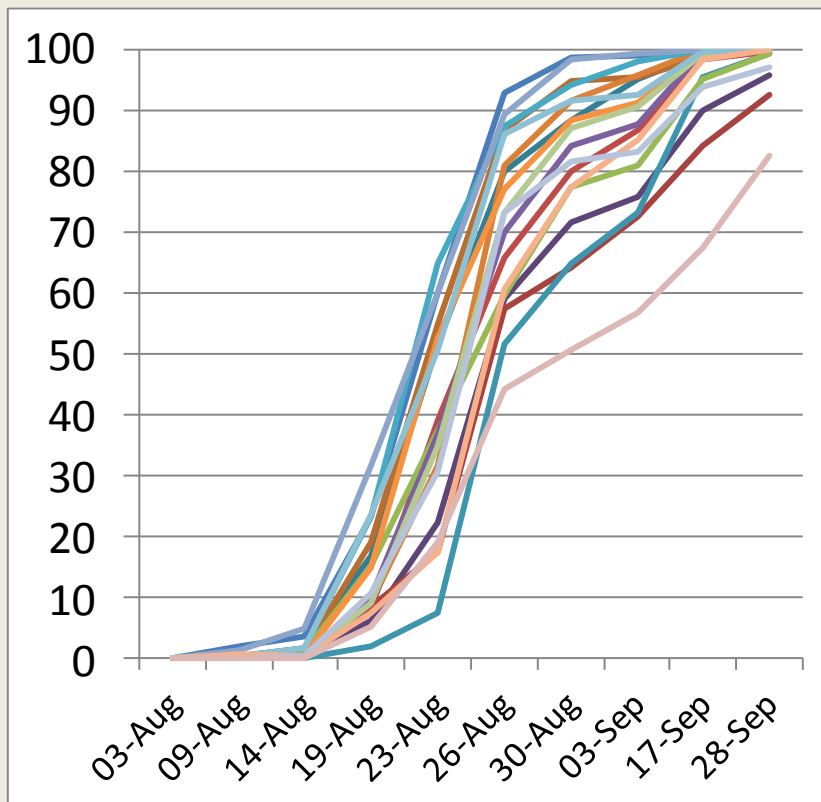
# Proportion of the GB planted potato area with 1 to 9 ratings for foliar blight resistance



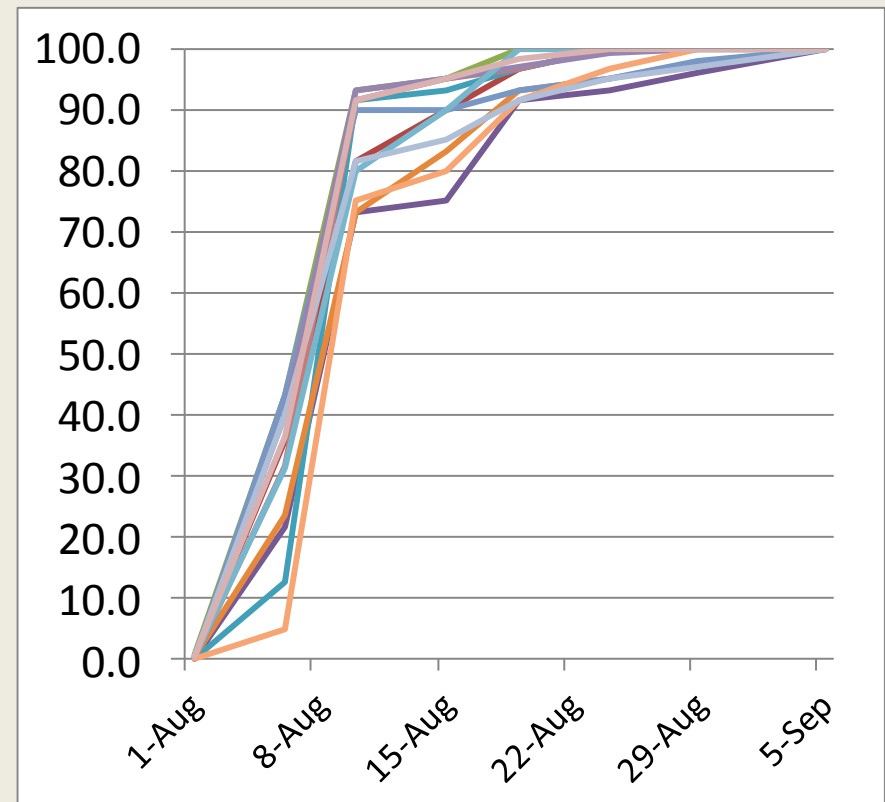
Data from AHDB – Potato Council

# Integrated control requires sufficient differences in foliar resistance between cultivars

## Scotland 2010 Untreated



## Wales 2010 Untreated



# Cultivar x fungicide trials: Wales (2010) and Scotland (2012)

- Five cultivars

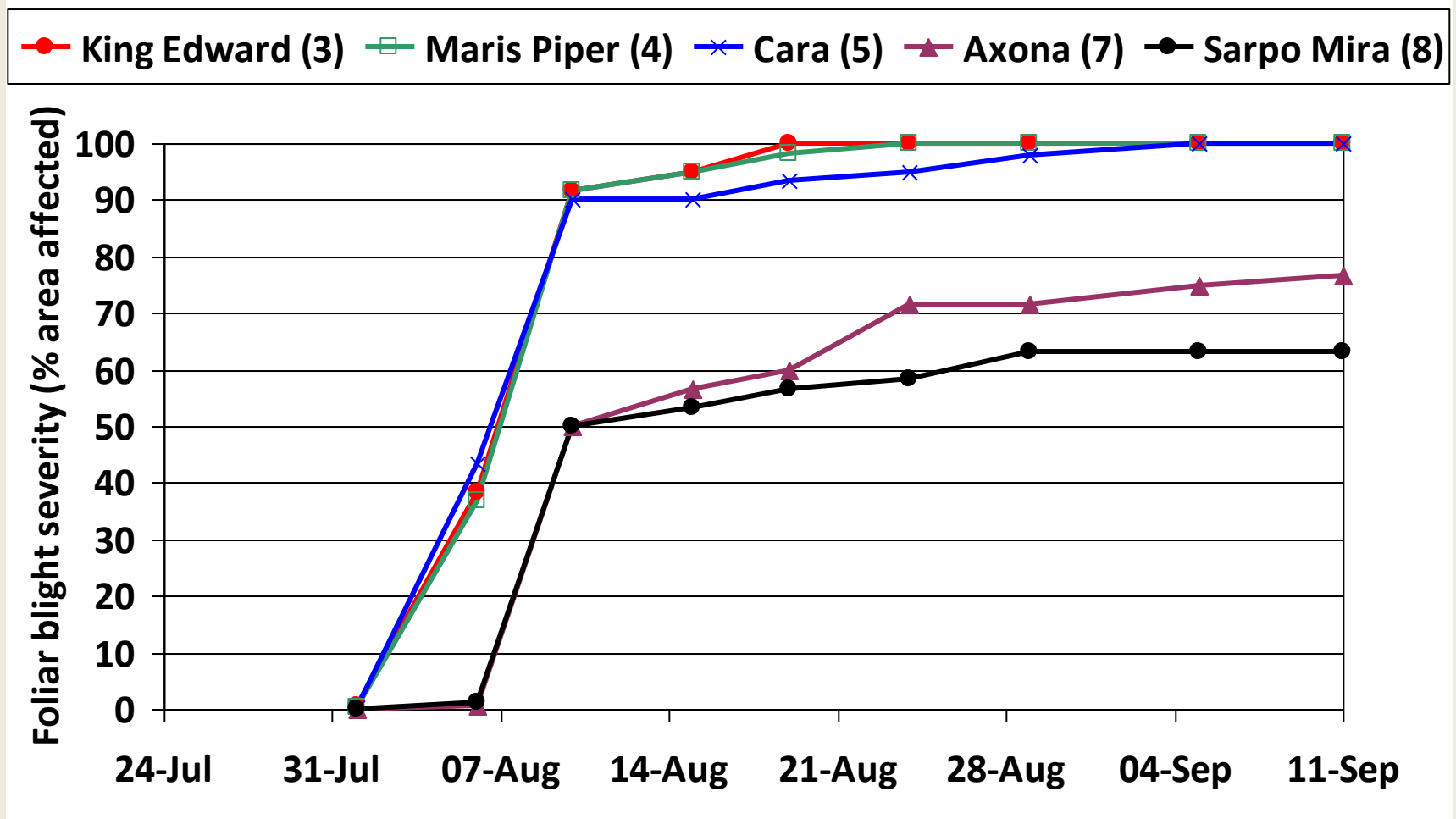
Wales: King Edward (3), Maris Piper (4), Cara (5), Axona (7),  
Sarpò Mira (8)

Scotland: King Edward (3), Maris Piper (4), Cara (5), Ambo (6),  
Sarpò Mira (8)

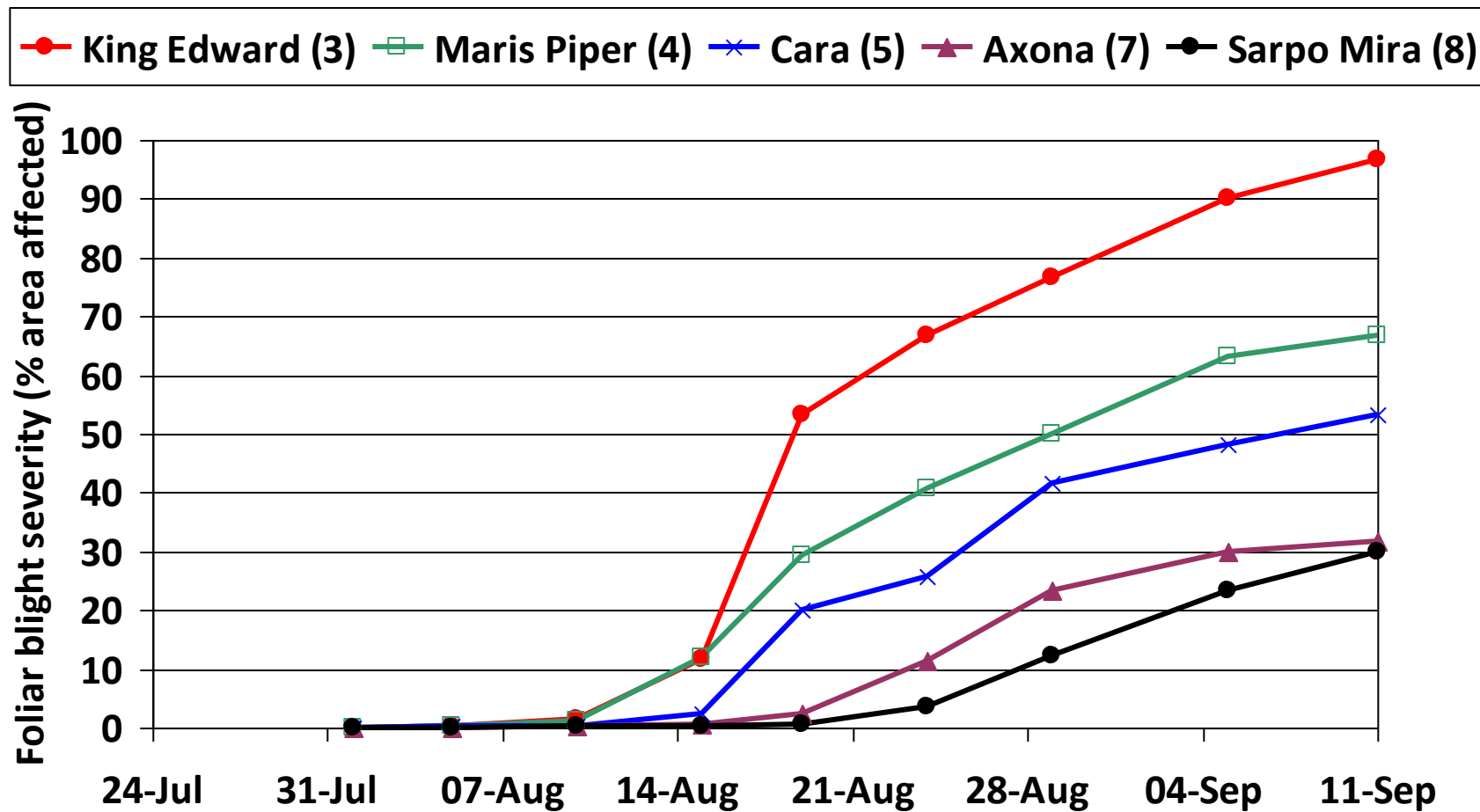
- Three treatments:
- Untreated
- 0.2 L/ha Shirlan (alternated with Quell Flo 1.65 L/ha in SCO)
- 0.4 L/ha Shirlan (alternated with Quell Flo 3.3 L/ha in SCO)

Shirlan = fluazinam, Quell Flo = mancozeb

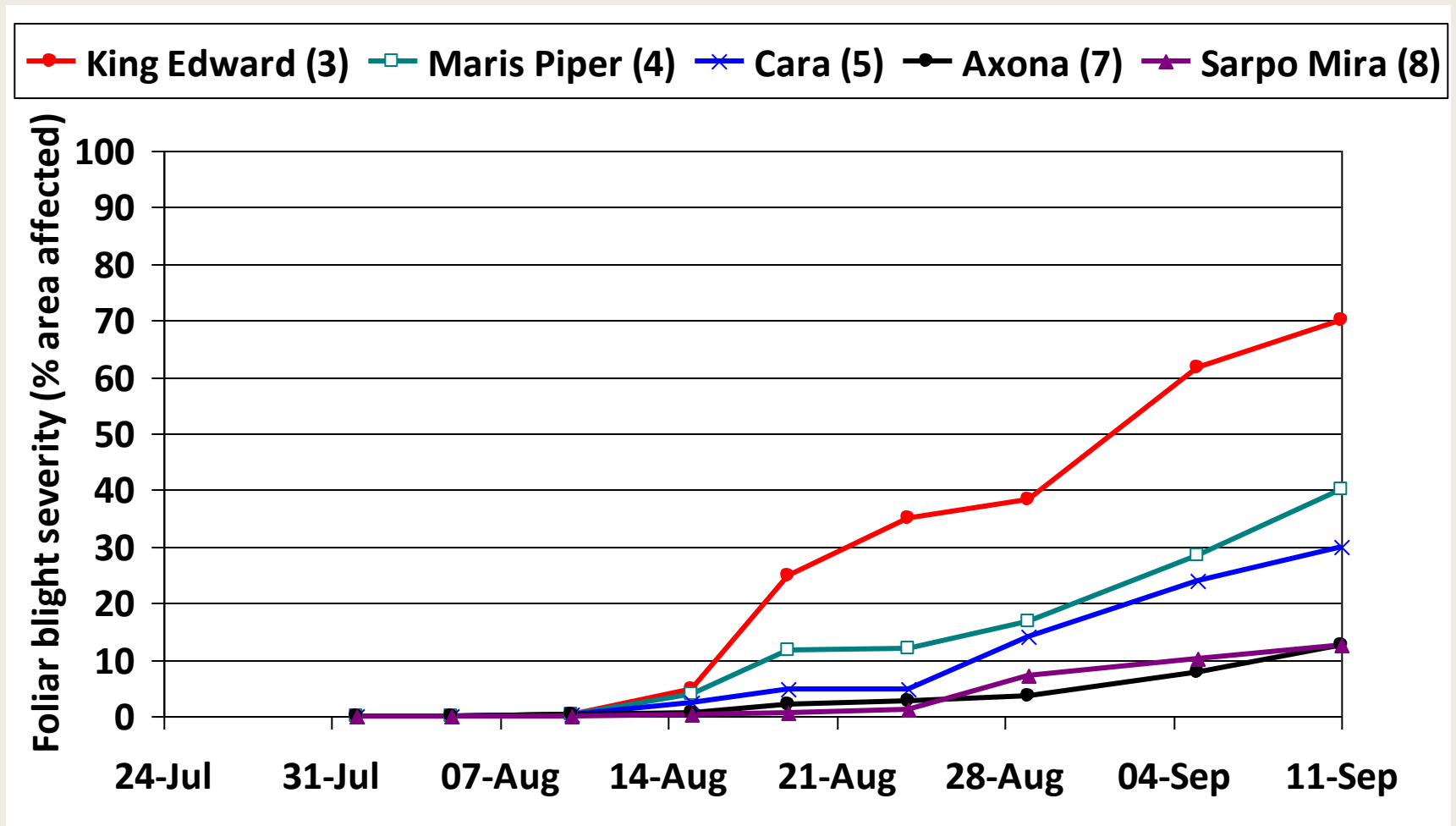
# Differences in foliar blight severity between cultivars rated 3 to 8: untreated (Wales 2010)



# Separation of varieties rated 3 to 8 following application of Shirlan 0.2 L/ha (Wales 2010)

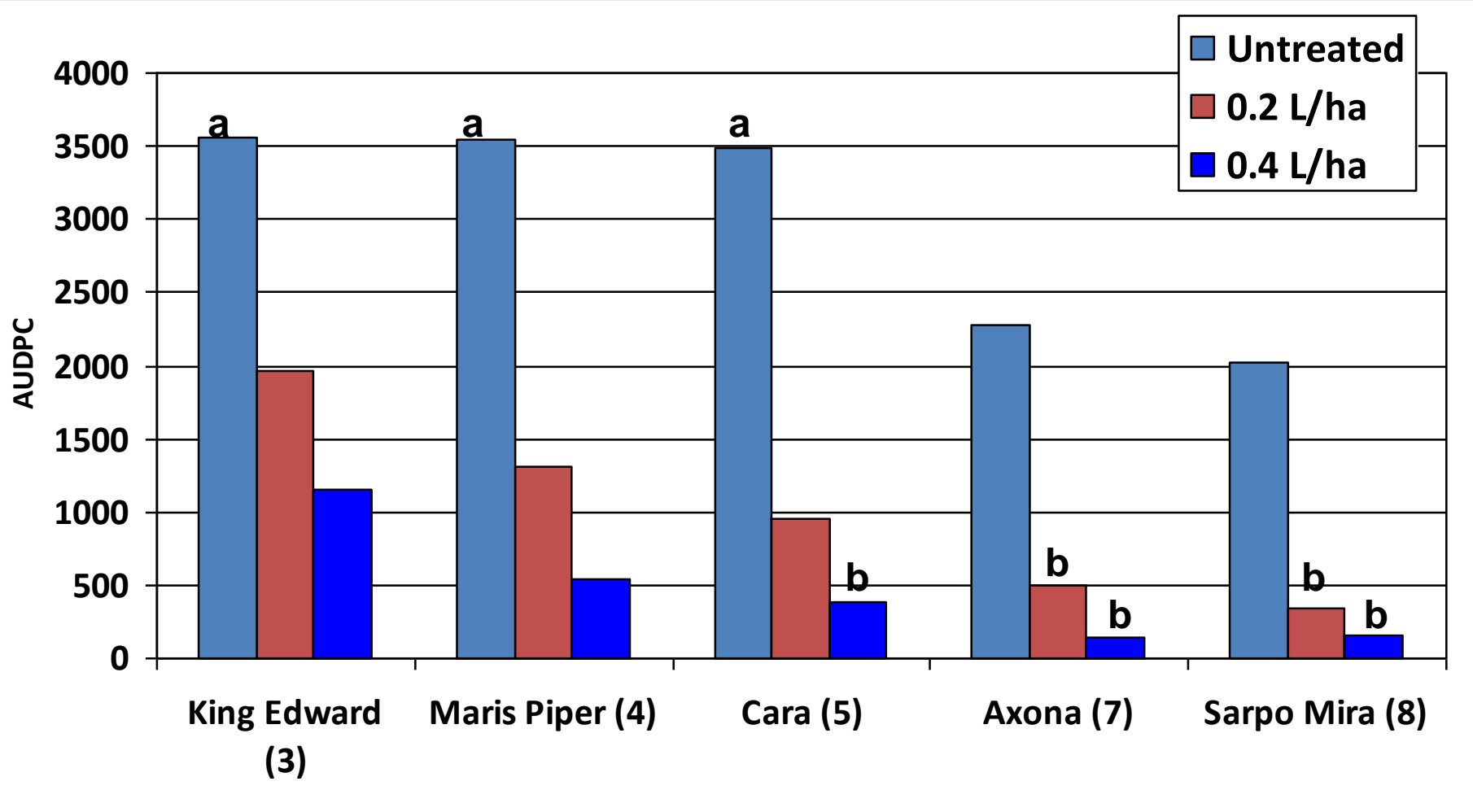


# Separation of varieties rated 3 to 8 following application of Shirlan 0.4 L/ha (Wales 2010)



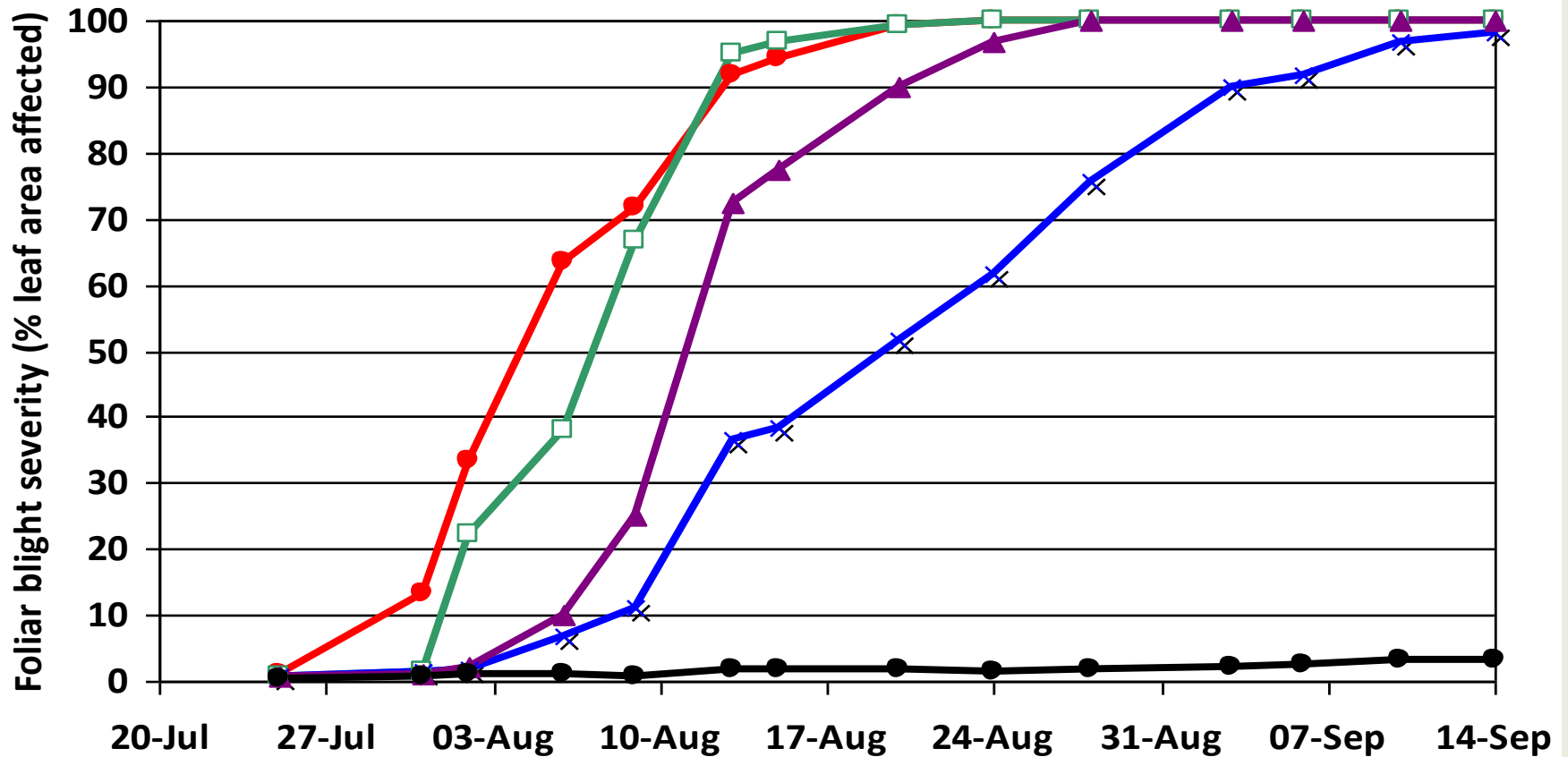


# Foliar blight development +/- fungicide (fluazinam) on selected varieties, Wales 2010

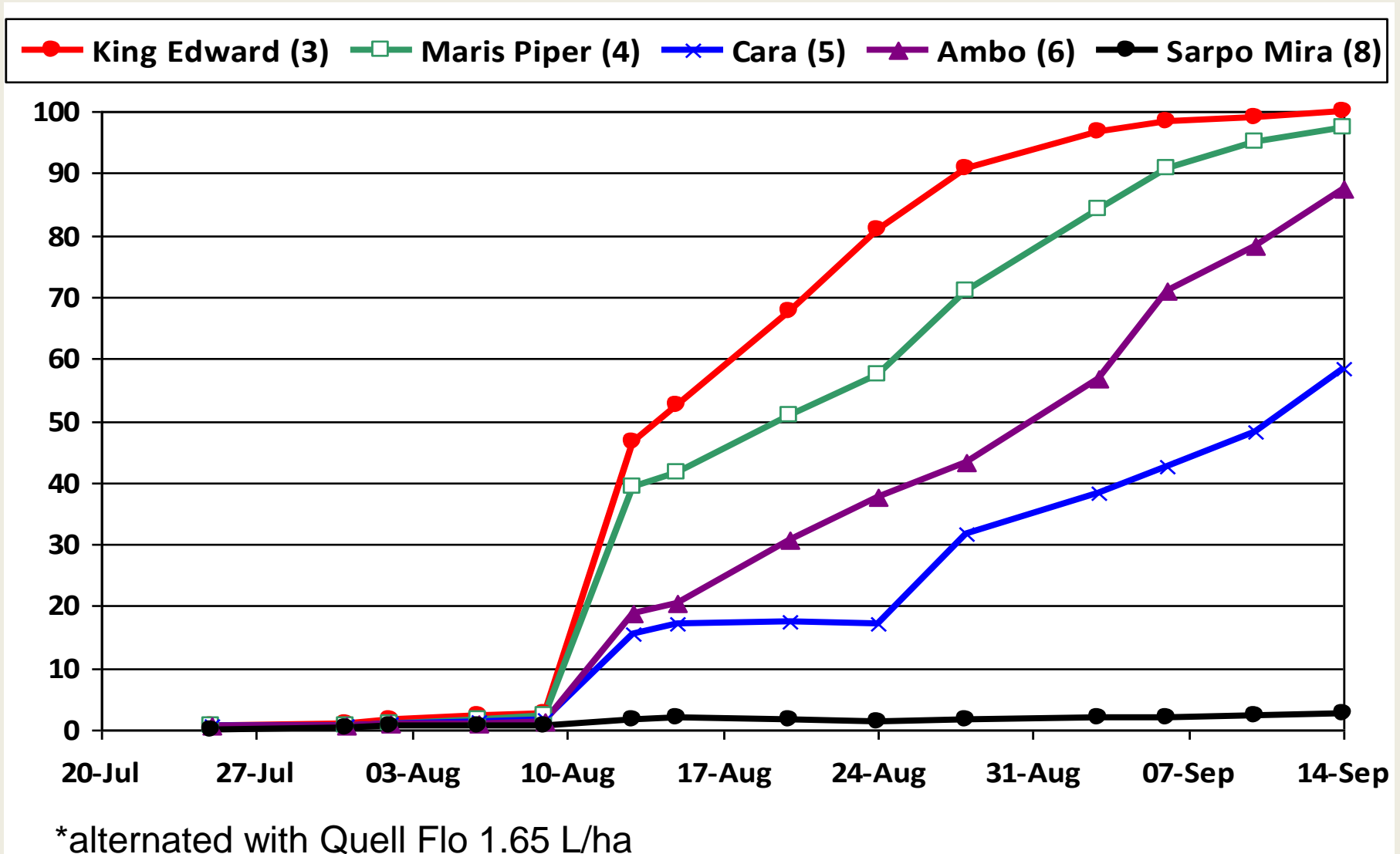


# Differences in foliar blight severity between cultivars rated 3 to 8 - Untreated (Scotland 2012)

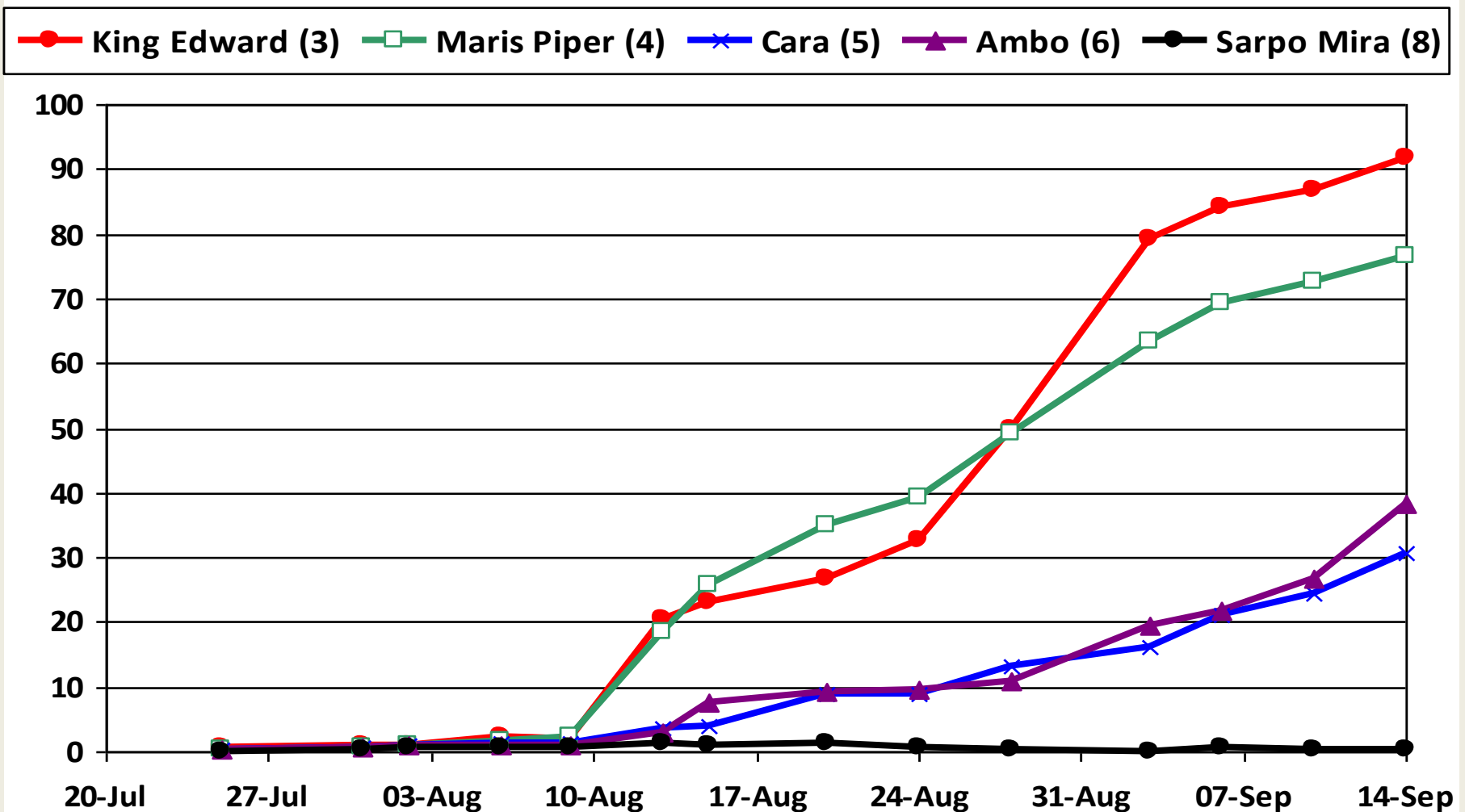
King Edward (3)   Maris Piper (4)   Cara (5)   Ambo (6)   Sarpo Mira (8)



# Differences in foliar blight severity between cultivars rated 3 to 8 – Shirlan 0.2 L/ha\* (Scotland 2012)



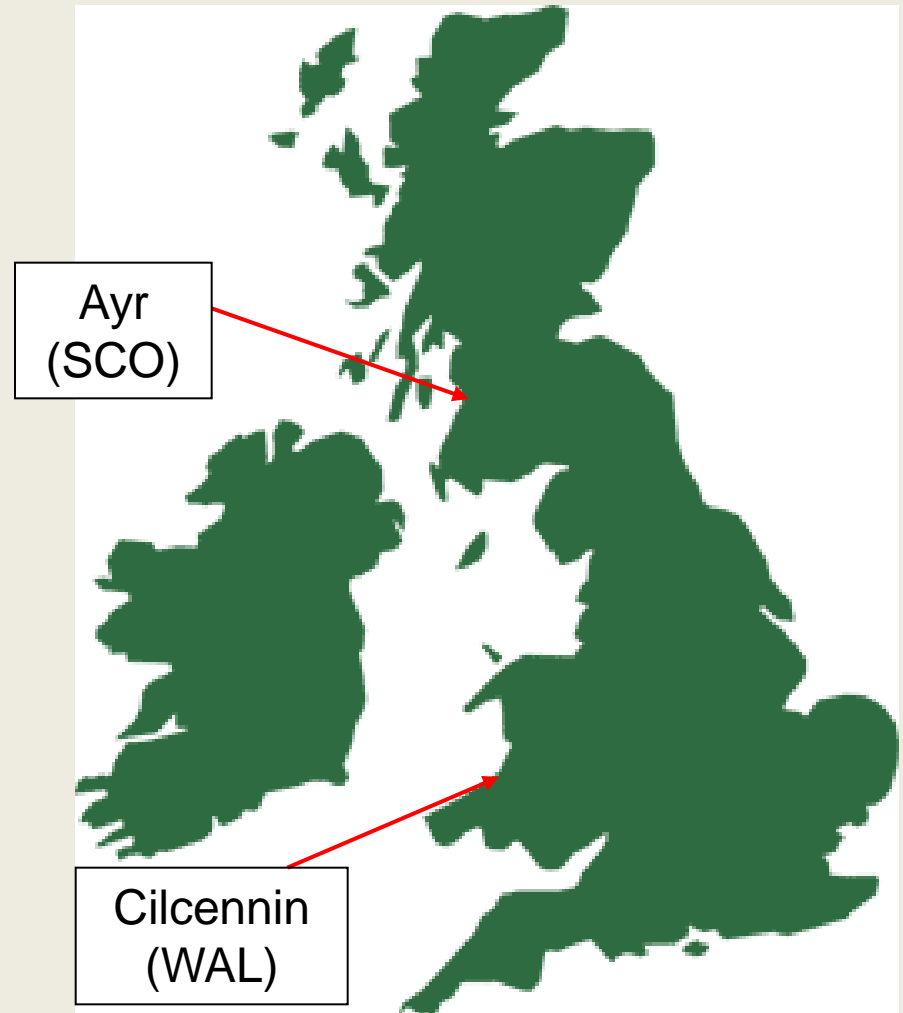
# Differences in foliar blight severity between cultivars rated 3 to 8 – Shirlan 0.4 L/ha\* (Scotland 2012)



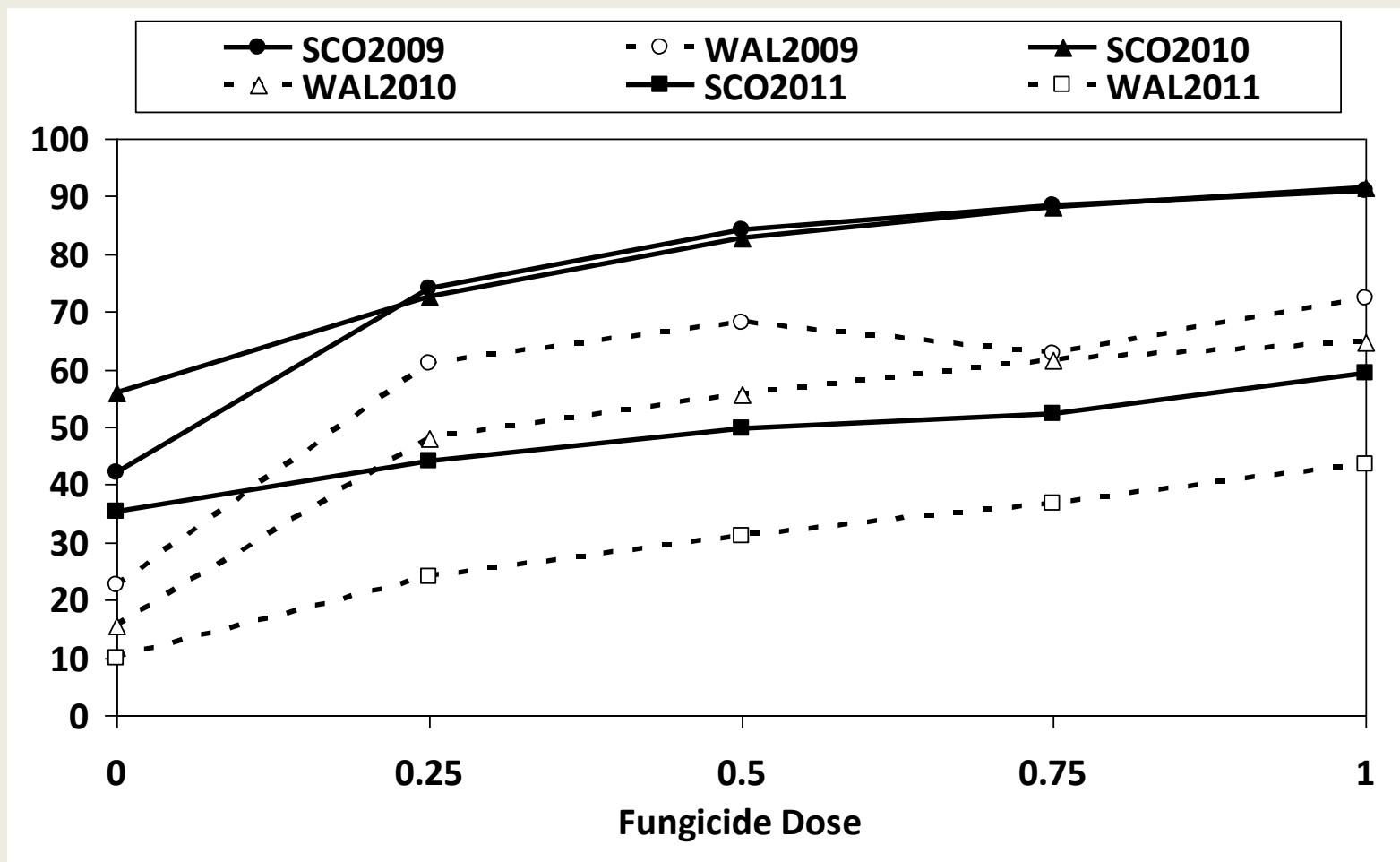
\*alternated with Quell Flo 3.3 L/ha

## Integrated control: cultivar resistance and fungicide dose in 12 field experiments 2009 to 2011 (Scotland and Wales)

- 6 rapid haulm trials:  
1 fungicide, 4 doses + untreated x 2 varieties
- 6 stable canopy trials:  
3 fungicides (average), 4 doses + untreated x 2 varieties

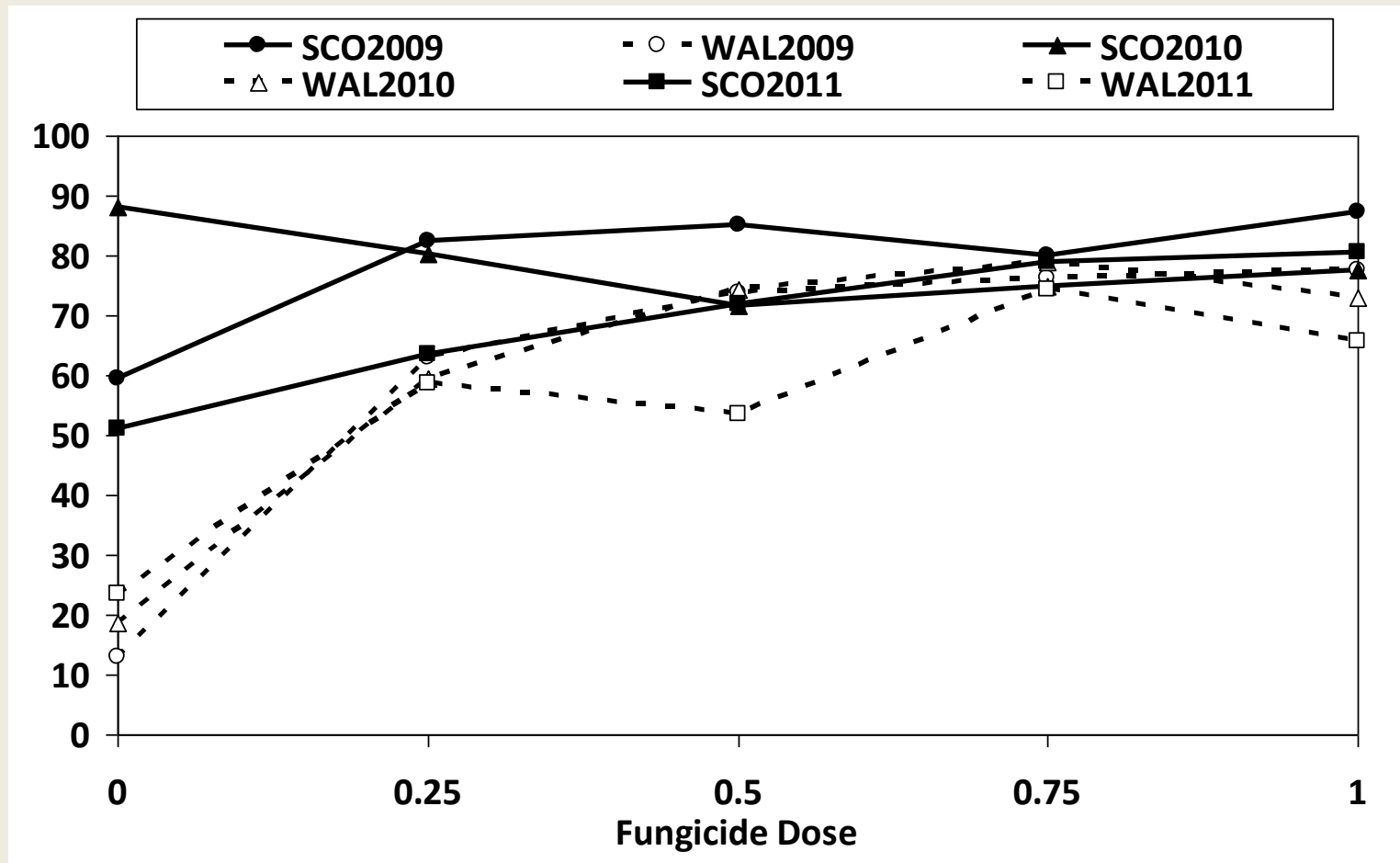


# Percentage\* between AUDPCs for King Edward (3) and Cara (5) in relation to fungicide dose for 6 trials 2009 to 2011 – stable canopy



\*Lower percentage = AUDPCs for each variety more similar

# Percentage\* between AUDPCs for King Edward (3) and Cara (5) in relation to fungicide dose for 6 trials 2009 to 2011 – rapid canopy



\*Lower percentage = AUDPCs for each variety more similar

## Lesion growth rate affected by leaf resistance rating and by leaf position in canopy

Variety	Leaf resistance rating	Linear lesion growth rate (mm day <sup>-1</sup> )		
		Leaf position = 0 (lower asymptote)	Leaf position = 9 (estimated from Fig. 4)	Leaf position = ∞ (upper asymptote)
Eersterling	2	6.5 <sup>a</sup>	4.3	4.0 <sup>a</sup>
Spunta	5	5.6 <sup>a</sup>	3.2	3.0 <sup>b</sup>
Alpha	5	6.2 <sup>a</sup>	3.4	2.6 <sup>bc</sup>
Robijn	8	5.3 <sup>a</sup>	3.0	2.0 <sup>c</sup>
	LSD	1.71	-	0.72

Data from Visker et al. 2003



**AUDPCs for cultivars with moderate resistance move away from susceptible variety (King Edward) and towards resistant variety (Sarpo Mira) when fungicide is applied to field plots**

- Results from thirteen field experiments - evidence that relative AUDPCs for cultivars differ substantially for different levels of fungicide input.
- Fungicides limiting sporangia production – assessment of resistance over wider range of leaf ages and growth stages
- Season long testing of cultivar resistance – include fungicides in variety screening?
- Minimum growth stage required for effective integrated control?



**Thank you**

